Procedures and Guidelines

DIRECTIVE NO.	302-PG-7120.2.1A	**APPROVED BY Signature:**	*Original signed by*
EFFECTIVE DATE:	August 7, 2001	**NAME:**	Jay Garvin
		TITLE:	Chief, Systems Safety and Reliability Office

Responsible Office: 302/ Systems Safety and Reliability Office

Title: Systems Safety Support to GSFC Missions and Other Organizations

P1. PURPOSE

Systems safety is implemented at Goddard Space Flight Center (GSFC) to eliminate or control hazards related to GSFC missions and activities. This procedure defines the organizational responsibilities and activities supporting systems safety activities, in compliance with Agency policy.

P2. REFERENCES

302-WI-7120.2.1 Establishment of Project Systems Safety Support Levels

P3. SCOPE

This document applies to the activities undertaken by Code 302, the Systems Safety and Reliability Office (SSRO), in the support of systems safety engineering on GSFC managed space flight projects, sub-orbital projects using balloons, sounding rockets, unmanned aerial vehicles, airplanes, and support to the GSFC Code 200 Facilities Management Division.

P4. DEFINITIONS

N/A

P5. AUTHORITIES AND RESPONSIBILITIES

a. NPD 7120.4, Program / Project Management
b. NPG 7120.5, Program and Project Management Process and Requirements
c. NPD 8700.1, NASA Policy for Safety and Mission Success
d. NSS 1740.14 Guidelines and Assessment Procedures for Limiting Orbital Debris

P6. CANCELLATION

302-PG-7120.2.1, Systems Safety Support to GSFC Missions

P7. QUALITY RECORDS

N/A

IMPLEMENTATION

1. Initiation of Systems Safety Support

Annual projected systems safety support levels are identified as part of the annual GSFC workforce planning. The SSRO initially responds to customer requirements with an assessment of project-specific safety issues, providing each customer with an understanding of the full spectrum of possible support needs. Actual systems safety engineering tasks and responsibilities that the SSRO will provide are defined for each project/mission, providing a tailored set of services to match project/mission requirements. The SSRO will then provide qualified Safety Engineering support personnel to the project.

Projects or organizations requesting comprehensive safety support are typically assigned a Project Safety Manager (PSM), who will coordinate the efforts of other assigned safety support staff. Projects or organizations requesting reduced levels of support may be provided a Safety Engineer, who is assigned to the project/organization until specific tasks are complete.

Although the primary Code 300 project interface for manned and ELV flight missions is the Systems Assurance Manager (SAM), who is a member of Code 303, the Assurance Management Office, Code 302 PSMs and support staff work directly with the project/organization on a daily basis, and provide status reporting to the SAMs on safety issues as required. Generally, SAMs are not assigned to other organizations include in the scope of this PG.

2. Safety Support Activities

Ideally, PSMs participate across all project/mission development phases, beginning during the development phase, and ending with vehicle launch or the conclusion of the mission. Project/mission development that utilizes the practice of concurrent engineering identifies and resolves safety issues early on, minimizing expense and risk.

Following is a description of the primary system safety engineering activities performed by the SSRO, and are documented as appropriate in the Goddard Document Management System.

2.1 Project Safety Plan Development

The Project/Mission Safety Plan defines how the safety program will be implemented in compliance with launch range, launch vehicle requirements or other appropriate requirements. At the request of the customer, the SSRO will develop or assist in the development of project/mission safety plan. The plan defines the required safety documentation, associated schedules for completion, and methodologies for the conduct of any required safety analyses.

2.2 Payload Safety Working Group (PSWG) Participation

PSWGs are often convened for manned and ELV missions to discuss a potentially broad range of safety related questions affecting mission or launch requirements. Bringing together NASA,

contractors, the Air Force, and other interested parties, Code 302 represents the interests of the project at these meetings, providing and/or receiving information that will support resolution of safety issues.

2.3 Launch Range Safety Compliance Documentation Development / Review

The completion of the Safety Data Package enables delivery and processing of GSFC-developed satellite systems at the launch range for manned and ELV missions. Development and/or review of the Safety Data Package in accordance with the appropriate launch range involves the interpretation of launch range requirements and an understanding of the measures taken by the project to meet them. Code 302 performs either complete development or a review of these documents based on project needs.

2.4 Launch Range Requirement Negotiation

Code 302 provides critical system safety support in the interpretation and compliance with launch range requirements. Requirements vary between the different ranges and launch systems, such as Expendable Launch Vehicles and the Space Shuttle. The governing requirement documents are well known to Code 302, and are implemented and managed in behalf of the GSFC projects/missions.

2.5 Launch Site Processing Support

Code 302 serves as the Goddard safety representative during launch range processing of GSFC payloads. Coordination of the various participants influencing safety-related issues, including NASA, U.S. Air Force, and contractors, is conducted by Code 302, who also performs an oversight role over payload handling procedures.

2.6 Safety Engineering Analyses

Code 302 offers a broad range of engineering services in support of systems safety for GSFC projects/missions and other organizations. Code 302 maintains expertise in the interpretation of, and compliance with requirements mandated by the Agency or launch range, as well as technical analyses undertaken in behalf of project/mission safety and risk management. These services are provided in accordance with the level of support selected by the project. Work Instruction 302-WI-7120.2.1 defines the process by which each project/organization and Code 302 jointly and formally establish safety support levels.

2.7 Independent Safety Certification for Projects

GSFC encounters a myriad of differently managed projects. In those cases where Code 302 and its support contractor perform the safety analyses and document the results appropriately, Code 302 will issue a Certification Letter attesting to the fact that all safety design requirements have been met and that all range safety requirements have been met. In those cases where the Code 302 support is surveillance rather then performance the Project Office will issue the Certification Letter and Code 302 shall evaluate it for concurrence.

CHANGE HISTORY LOG

Revision	Effective Date	Description of Changes
Baseline	1/29/01	Initial Release
A	8/7/01	Broadened scope of procedure to include Systems Safety support to all GSFC organizations.